

Index

Page numbers in *italics* refer to Figures. Page numbers in **bold** refer to Tables.

- aerosols, and cloud formation 213
- Africa, palaeomagnetic variation data and SAA 4, 129–138
 - central Africa **132**, 133
 - northern Africa 133, **134–136**, 136–138
 - southern Africa 130, **131**
- Agnano Monte Spina Campi Flegrei 4420BP eruption tephra 162, **163**, 174
- Aleutian Islands, DSV path 114
- Ancylus Lake sediments 184
- Anholt Loch, Baltic Sea 180
 - Site M0060 179, 180
- Arai diagrams
 - Bulgarian Neolithic sites 102, 104
 - Maharashtra archaeological artefacts 16, 20, 21, 22
 - Melbourne firebricks 38
 - New Zealand *hangi* stones 57, 58, 59, 60, 61, 62, 63, 64
- archaeointensity 3–4
 - archaeomagnetic jerks or spikes 66, 68, 104, 105, 189
 - artefact sourcing potential 40–41
 - Australia 4, 27, 29, 31–33, 34–42
 - Bulgarian Neolithic sites 4, 93, 98–108
 - France 4, 84–85
 - India, archaeological artefacts 3–4, 10, 12–13, 16, **18–19**, 20, 21, 22–23
 - Italy, Tuscan architectural bricks 4, 74–85
 - New Zealand 4, 48–69
- archaeomagnetic databases 113
 - DSV curve
 - Bulgaria 104–108
 - France AD1000-1500 4, 115–118, 119
 - intrinsic limitations 122, 125
 - synthetic
 - effect of data density 122, 124
 - effect of dating and uncertainty 120–122, 123
 - sensitivity analysis 118–120
- archaeomagnetism 1, 3–4, 47, 89
 - Australia 27
 - dating, *hangi* stones **50–51**, 52–53, 54–56
 - ‘jerk’ 2, 66, 68, 104
 - Neolithic
 - Bulgaria 90–108
 - determination 98, 100, 102, **103**, 104
 - reference curves 105, 106, 107
 - Tuscan architectural bricks 77–79
 - Asciano Pisano, architectural bricks 75, **76**, 77
 - Astroni3 4297-4098BP event tephra 162, **163**, 174
 - Augusta Bay data 164, 166, 168, 172–175
 - Australia
 - archaeointensity 4, 29, 31–33, 34–42
 - see also* firebricks, nineteenth-century Scottish, Melbourne Iron Foundry
 - Holocene palaeointensity record 27–28, 41
 - VADMs 66, **67**, 68
- baked bricks, Pisa architecture 4, 74–85, 75
- baked clay, rock-magnetic properties 96–98, 100, 101, **103**, 104, 115
- Baltic Sea
 - IODP Expedition-347 179
 - age model 187–188, 189
 - ARM 186–187, 188
 - coercivity 186
 - demagnetization 182, 183
 - FORCs 185–186, 187
 - GAD 182, 184, 186, 187
 - inclination 5, 182, 184, 186, 188, 189–190
 - induced magnetization 186–187, 188
 - MAD 182
 - magnetic susceptibility 179, 182, 184, 188
 - NRM measurement 179, 181–182, 183, 184, 186
 - palaeosecular variation (PSV) 179, 188–189
 - PCA 186
 - radiocarbon dating 187–188, 189
 - relative palaeointensity 5, 179, 186, 187, 189
 - rock magnetic experiments 184
 - RPI 5, 179, 186, 187, 189
 - sediment source 185
 - sedimentation rate 188
 - SIRM 186–187, 188
 - TEM experiments 184–185, 186
 - VRM 182, 186
- ¹⁰Be, ice cores 1
- ¹⁰Be/⁹Be ratio 1
- biostratigraphy, Tyrrhenian Sea sediment 162
- bioturbation 2, 127, 195
- Blake event 194
- Blekinge archipelago 180
- Bocchette di Putignano, Pisa, architectural bricks 75, **76**
- Botswana, palaeomagnetic data 130, **131**
- bricks *see* baked bricks; firebricks
- Brunhes Chron 194
- Brunhes-Matuyama (MB) polarity transition 193–194
 - ODP palaeomagnetic dataset 194–195
 - VGP displacement 5, 194–202
 - age-deposition model 195
 - latitude variation 195, 196
 - velocity and acceleration 195–196, 197–200
- Buddhism, archaeological sites 10–12
- Bulgaria
 - geomagnetic field variation 104–105, 107
 - Neolithic sites 90–92
 - archaeointensity 4, 93, 98, 102, 105, 106
 - archaeomagnetism 92–108
 - database 104–108
 - determination 98, 100–104
 - DSV reference curve 105, 106, 107, 108
 - ARM 93, 102
 - cooling rate effect 93, 104
 - demagnetization 92–93, 98, 99
 - IRM 93
 - magnetic susceptibility 93, 96, 97, 100
 - MDFs 98, 108
 - NRM 92, 96, 98, 99, 102, 105
 - radiocarbon dating 90–91
 - rock-magnetic properties 96–98

- Bulgaria (*Continued*)
 SIRM 93, 98, 101
 SP particles 98
 TRM 93, 98, 102
 viscosity coefficient 97
- Burkina Faso, palaeomagnetic data **134–135**, 136–137
- Calcinaiia, Tuscany, architectural bricks **76**, 77, 83
- Cameroon, palaeomagnetic data **132**, 133
- Canada, eastern, DSV path 114
- Canadian anomaly 208
- Canary Islands, palaeomagnetic data 130, 133, 136, **136–137**
- Cape Ghir, palaeomagnetic data **136–137**, 137
- charged particles
 and cloud formation 213
 and geomagnetic field 206, 212–213
 geomagnetic lensing 217, 219
 hemispherical asymmetry 219–221
 lower atmosphere 217, 219–221
- Chavdarova Cheshma
 Neolithic site 91, 92, 93, **95**
 AI determination 98, 100, **103**, **104**, 105, 108
 rock-magnetic properties 96–98, 99, 101
- ³⁶Cl, ice cores 1
- Clarence River, *hangi* site 49, **50–51**, 52, 56, 57, 61–63, **67**
- climate variability
 and geomagnetic field 1, 5, 205–223
 conceptual model 221–222
 controversy 205–206
 data and statistical methods 207–208
 recent evidence for relationship 209–212
see also geomagnetic field
- cloud formation 213
- CO₂, solubility, and geomagnetic field variation 213
- Coe sequence 10, 13, 16, 57, 93
- coercivity
 Baltic Sea sediments 186
 HCSLT, Bulgarian Neolith sites 98
 Melbourne firebricks 33, 34
 Tirna Basin sediments 146, 147, 149, 155
 Tyrrhenian Sea sediment 164
- Congo fan, palaeomagnetic data **132**, 133
- conversion via pole (CVP) method 166, 170–171
- cooling rate effect
 Bulgarian Neolithic sites 93, 104
 Melbourne firebricks 31, 33
 New Zealand *hangi* stones 65
- core-flux expulsion, CMB, southern Africa 130
- core-mantle boundary 3, 160
 southern Africa 130
 and VGP paths 200, 202
- cosmic radiation, galactic (GCRs)
 and atmospheric variables 213–214
 and geomagnetic field 206
 data 207, 218
 impact on climate 206, 213
 geomagnetic lensing 217, 219–221
 and ozone density 215–217
- curve matching, Tyrrhenian Sea sediment 163–164, 168, 170, 173, 175
- Darss 180
- Deccan Plateau 144
 Quaternary sediments 145
- declination 4
 Bulgarian Neolithic sites 105, 106, 107
 Fennoscandia 190
 French archaeomagnetic database 115, 117
 Tirna Basin sediments 148, 153–154, 153
 Tyrrhenian Sea sediment 162, 172, 173, 174
- demagnetization
 Baltic Sea sediments 182, 183
 Bulgarian Neolithic sites 92, 98, 99
 thermal
 Maharashtra archaeological artefacts 12–13, 17
 Melbourne firebricks 31, 34, 35, 36
 Tuscan architectural bricks 77–78, 79, 81
 Tirna Basin sediments 146, 147, 148
 Tyrrhenian Sea sediment 161, 162, 165, 169
- diagenesis 2, 127, 195
- directional secular variation (DSV) 113–115
 Bulgaria 105, 106, 107, 108
 Europe 113–114
 France 113
 AD1000–1500 115–118, 119, 120
 Great Britain 113, 120
 synthetic databases
 effect of data density 122, 124
 effect of dating and uncertainty 120–122, 123
 sensitivity analysis 118–120
 yaws and loops 114, 118, 119, 120, 121, 122, 125
- Earth's magnetic field *see* geomagnetic field
- Egypt, palaeomagnetic data **134–135**, 137
- Ethiopia, palaeomagnetic data **134–135**, 138
- Europe, archaeointensity 81, 82, 83–85
- Fehmar Belt 180
- Fennoscandia
 inclination and declination 190
 palaeomagnetic master curve 5, 190
 PSV 181, 189
- Fiji, VADM 66, **67**
- firebricks, nineteenth-century Scotland
 manufacture 29, 34
 Melbourne iron foundry 4, 29, 30
 archaeointensity experiment 31, **32**, 33, 34–42
 cooling rate 31, 33, 37, 39
 demagnetization 31, 34, 35, 36
 FORCS 31, 34
 magnetic field contamination 39
 magnetic minerals 31, 33–34, 35, 36, 37, 39
 magnetic susceptibility 31, 35
 sample preparation 30–31
- fireplaces
 Australia 27
 Bulgarian Neolithic sites 104
- firing, Neolithic dwellings 92, 98, 104, 108
- first-order reversal curves (FORCs)
 Baltic Sea sediment 185–186, 187
 Melbourne firebricks 31, 34
 Tirna Basin sediments 145, 146, 149, 152
 Tyrrhenian Sea sediment 162, 164, 166
- Flagstaff Observatory 28, 29
- flocculation, and magnetic field variation 152
- floors, burnt

- Neolithic dwellings 92, **94–95**, 96–97, 98, *100*, 104, 105, 108
 South Africa **131**
- Florentine Fortress, Pisa, architectural bricks 75
- flowstones, geomagnetic dating 2, *127*
- France
 archaeomagnetic database 4, 115
 archaeointensity 84–85
 DSV, AD1000–1500 115–118, *119*
- Garigliano River 160, *161*
- Gauss, Carl Friedrich (1777–1855), geomagnetic intensity measurement 28–29, 47
- geocentric axial dipole (GAD) 128, 193, 206
 Baltic Sea 182, *184*, 186, 187
- geodynamo 10
- GEOMAGIA database 2, 21–22, 23, 127
 Australia 28, 41
- geomagnetic field
 anomalies 3
 average field strength 2
 behaviour 194
 charged particles 206, 217, 219–221
 and climate variability 1, 5, 205–223
 atmospheric variables 207
 CO₂ solubility 213
 conceptual model 221–222
 controversy 205–206
 galactic cosmic rays (GCRs) 207
 magnetic field data 207
 mechanisms 212–213
 recent evidence for relationship 209–212
 statistical methods 207–208
- cosmic radiation 206, 217–221
- dipolar 206
- excursions 3, 5, 193, 194, 200, 206
- fluctuation 1–2
see also palaeosecular variation
- Holocene 127
- intensity
 and surface temperature 209–212, 222
see also archaeointensity; palaeointensity
 ‘magnetic trap’ 206
- origin and evolution 2
- palaeointensity spikes 3, 128
- reversal 2–3, 5, 193, 194, 199, 200
 effect on climate 206
 effect on electrical systems 128
 SAA 128, 130
- transition 199, 200, 202
- twentieth century
 spatial evolution 208–209
 temporal evolution 209
 understanding of 128
- geomagnetic lensing 217, 219
- Germany, archaeointensity 84
- Ghana, palaeomagnetic data **132**, 133
- Globigerinoides quadrilobatus* 162, **163**
- Globorotalia truncatulinoides* 162, **163**
- grain size, and magnetic field variation 152–153
- Gran Canaria, palaeomagnetic data 133, **136–137**
- Great Belt *180*
- Great Mercury Island, *hangi* site 49, **50–51**, 52, 54, 58, 59, 66, **67**
- Greece, archaeointensity curve 105, *106*, *107*
- greigite
 Baltic Sea Sediments 184, 185, *186*
 Tyrrhenian Sea sediment 166
- Gulf of Gaeta 160, *161*
- Gulf of Salerno core data 168, 174
- Gulf of Taranto MP49 core data 168, 175
- gyroremanent magnetization, Baltic Sea 182
- hangi* stones, New Zealand
 archaeointensity 4, 48–69
 age estimation 49, 52
 cooling rate 65
 external effects on magnetic field 64–65
 record 66
 VADMs 66, **67**, 68
 archaeological sites 49, **50–51**, 54–56
 archaeomagnetic dating **50–51**, 52–53, 54–56, 65
 magnetic remanence measurements 56
 magnetic susceptibility 57, 58–63, *64*
 palaeointensity determination 57–58, *65*
 radiocarbon dating 49, **50–51**, 52–53, 54–56, 65
 sample collection 48–49, **50–51**, 52, 54–56
- hearths
 archaeomagnetization 27, 113
 Bulgarian Neolithic sites 104
- hematite
 Bulgarian Neolithic sites 98
 Maharashtra archaeological artefacts 15, 16
 Melbourne firebricks 33
 Tuscan architectural bricks 81
- high-coercivity stable low-temperature (HCSLT) magnetic phase 33, 98
- Holocene, geomagnetic field 127
- Hungary, archaeointensity curve 105, *106*
- igneous rock, absolute palaeointensity estimates 143
- Ilindentsi, Neolithic site 91, 92, **94**
 archaeomagnetic determination *100*, *101*, **103**, **104**
 rock-magnetic properties 96–97, 99
- inclination 4
 Baltic Sea 5, 182, *184*, 186, *188*, 189–190
 Bulgarian Neolithic sites 105, *106*, 107
 Fennoscandia 190
 French archaeomagnetic database 115, *117*, 118
 positive anomaly 128
 shallowing 2, 127, 128, 166, 195
 Tirna Basin sediments 148–149, *153*, 154
 Tyrrhenian Sea sediment 162–163, 166, 172, *173*, 174
- India
 archaeointensity estimates 3–4, 9–24
 archaeological sites 10–12
 palaeointensity 4
 secular variation curves 10, 20–23
 inner core, formation 2
- IODP Expedition 347, Baltic Sea 179
- Iraq, archaeointensity curve 105, *106*, 107
- iron oxide, Bulgarian Neolithic sites 108
- Italy
 archaeointensity 4, 73–85
 Tuscan architectural bricks 74–85
 archaeointensity curve 105, *106*, *107*
 IZZI variant, Thellier method 31, 57, **137**

- Jaramillo subchron 194
- Junnar archaeological artefacts 10–11, **11**
 archaeointensity studies 16, **18**, 20, 21, 22
 rock-magnetic properties **14**, 15, 16, 17
- Kanheri archaeological artefacts 10, 11–12
 archaeointensity studies 16, **19**, 20, 22
 rock-magnetic properties **14**, 15, 16, 17
- Kenya, palaeomagnetic data **132**, 133
- kilns, archaeomagnetization 113
- Kriegers Flak 180
- La Palma, palaeomagnetic data 133, **136–137**
- Lake Albert, palaeomagnetic data 129, **132**, 133
- Lake Barombi Mbo, palaeomagnetic data 129, **132**, 133
- Lake Bosumtwi, palaeomagnetic data **132**, 133
- Lake Eilandvlei 129, 130, **131**
- Lake Malawi, palaeomagnetic data 129, **132**, 133
- Lake Mungo excursion 27
- Lake Swartvlei 130, **131**
- Lake Tanganyika, palaeomagnetic data 129, **132**, 133
- Lake Turkana, palaeomagnetic data 129, **132**, 133
- Lake Vänern 180
- Lake Victoria, palaeomagnetic data 129, **132**, 133
- Landsort Deep 180
- Langeland 180
- Langland's Iron Foundry, Melbourne 28, 29
- Lanzarote, palaeomagnetic data 133, **136–137**
- Lapita pottery, archaeointensity data 66
- large low-shear velocity province (LLSVP), and SAA 130
- Laschamp excursion 194
- Levantine spike 3, 172, 173, 174, 175
- Little Belt 180
- Lowrie test, Bulgarian Neolithic sites 98, 100, 101
- Magnetic Information Consortium (MagIC) 2, 127
- magnetic susceptibility 143, 181
 Baltic Sea sediment 179, 182, 184, 188
 Bulgarian Neolithic sites 93, 96, 97, 100
 Maharashtra archaeological artefacts 12, 15–16
 Melbourne firebricks 31, 35
 New Zealand *hangi* stones 57, 58–63, 64
 Tirna Basin sediments 146, 150
 Tuscan architectural bricks 78, 79
 Tyrrhenian Sea sediment 161, 162, 164–165, 167, 168
- 'magnetic trap' 206
- magnetite
 Baltic Sea sediment 184, 186
 Bulgarian Neolithic sites 98, 108
 Maharashtra archaeological artefacts 14, 15, 16
 Tirna Basin sediments 146, 147, 153, 155
 Tuscan architectural bricks 81
 Tyrrhenian Sea sediment 164, 165
- magnetization *see* remanent magnetization
- Maharashtra State, India
 archaeological artefacts 10–12, 11
 archaeointensity studies 12–13, 16, **18–19**, 20
 ARM 12
 IRM 12
 magnetic susceptibility 12, 15–16
 rock-magnetic studies 12, 13–16
 SIRM 12
 relative palaeointensity determination 144–156
- Malawi, palaeomagnetic data 129, **132**, 133
- Mali, palaeomagnetic data **134–135**, 136–137
- Mapungubwe, palaeomagnetic data **131**
- Marti, Tuscany, architectural bricks **76**, 77, 83
- Matuyama Chron 194
- maximum angular deviation (MAD)
 Baltic Sea 182
 Bulgarian Neolithic sites 100
 Tyrrhenian Sea sediment 162, 165
- Mecklenburger Bay 180
- median destructive field (MDF)
 Bulgarian Neolithic sites 98, 108
 Tyrrhenian Sea sediment 162
- Medici Aqueduct, Pisa, architectural bricks 75, **76**, 77
- Medici Arsenal, Pisa, architectural bricks 75, **76**
- Melanesian Islands, VADMs 66, **67**
- Melbourne, iron foundry site 28, 29
see also firebricks, nineteenth-century Scottish, Melbourne Iron Foundry
- Melbourne Magnetic Observatory 28
 magnetic field data 29–30, 41
- Møn 180
- Morocco, palaeomagnetic data **134–135**, **136–137**, 137
- Mt Cameroon, palaeomagnetic data **132**, 133
- Mt Tarawera, palaeointensity 66, 68
- Mt Tongariro, palaeointensity 66, 68
- multidomain grains 185, 186
- Mursalevo, Neolithic sites 91–92, **94**, **103**
- Nalasopara archaeological artefacts 10, 11, **11**, 12
 archaeointensity studies 16, **19**, 20, 22
 rock-magnetic properties **14**, 15, 16, 17
- natural remanent magnetization (NRM)
 Baltic Sea 179, 181–182, 183, 184, 186
 Bulgarian Neolithic sites 92, 96–97, 98, 99, 102, 105
 Maharashtra archaeological artefacts 13, **14**, 16, 20
 Melbourne firebricks 31, 33, 34
 New Zealand *hangi* stones 57
 normalization 143, 181
 Tirna Basin sediments 146, 147–148, 151–152, 155
 Tuscan architectural bricks 77
 Tyrrhenian Sea sediment 161
- Neolithic, Bulgaria 90–92
 archaeointensity 4, 93, 98, 102
 archaeomagnetic database 104–108
- New Caledonia, VADMs **67**
- New Zealand
 archaeointensity 4, 47–69, 49
 relocation of data to reference location 64
see also *hangi* stones, New Zealand
 early inhabitants 47–48
- NextData project 160–175
- North Geomagnetic Pole 181, 209
- $\delta^{18}\text{O}_G$, *ruber* correlation 162, **163**
- Ocean Drilling Project (ODP), palaeomagnetic datasets,
 BM transition 194–195
- Ohariu Valley, *hangi* site 49, **50–51**, 55, 60, 62, **67**
- Olduvai subchron 194
- Onshore Science Party (OSP), NRM measurement 179,
 181–182, 188
- Opihi, *hangi* site 49, **50–51**, 56, 63–64, **67**
- Øresund 180
- ovens, Bulgarian Neolithic, archaeointensity 92, **94–95**,
 96–98, 99, 100, 101, 104, 105, 108

- ozone, tropopause 206, 222
and water vapour 215–217, 222
- Paekakariki *hangi* site 49, **50–51**, 55, 59–60, 61, **67**
- palaeodeclination 4
Tirna Basin sediments 149, 153–154
- palaeoinclination 4
Tirna Basin sediments 148–149, 153, 154
- palaeointensity 2
absolute 127–128
Australia 27–28, 33
New Zealand 57–58, 65
relative (RPI) 128, 143, 181
Africa 129–130
Baltic Sea 5, 179, 186, 187, 189
India 4
Tirna Basin 4, 144, 146, 150–151, 152, 154–155
Tyrrhenian Sea 160, 162, 166–167, 172–174, 175
spikes 3, 128
- palaeomagnetism 1
Africa 4, 129–138
- palaeosecular variation (PSV) 2, 4–5, 128, 160, 209, 222
Africa 4, 129–138
Baltic Sea 179, 188–189
Bulgaria 104–105
Fennoscandian 181, 189, 190
India 10, 20–23
Tirna Basin sediments 4, 152–153
regional correlation 153–155
Tyrrhenian Sea 4, 160, 162, 166, 170, 171, 175
virtual geomagnetic poles (VGPs) 193, 196
- Paris, DSV path 114, 115–116
- Pisa, architectural bricks 74–77, 75
archaeointensity **76**, 77–85, **80**, 81, 83–85
Triaxe protocol 77–78, 79
composition 83
IRM 78, 79, 81
magnetic mineralogy 78, 79, 81
magnetic susceptibility 78, 79, 81
thermal demagnetization 77–78, 79, 81
- plaster cap method 48, 52, 115
- Prince Edward Islands, Indian Ocean, DSV path 114
- pseudo-single domain (PSD) state mineral 147, 152–153, 155, 164
- pseudo-Thellier normalization method 4, 13, 128, **137**
Tirna Basin sediments 144, 146, 147, 150–152
reliability 155
- radiocarbon dating
Baltic Sea sediment 187–188, 189
Bulgarian Neolithic 90–91
hangi stones 2, 49, **51**, 52–53, 54–56, 65
Maharashtra archaeological artefacts **11**
Tirna Basin sediments 145
- radionuclides, cosmogenic, and geomagnetic field 128, 160, 206
- Regener-Pfotzer Maximum 206, 215, 222, 223
- remanent magnetization 12–13
anhysteretic (ARM) 143, 144, 181
Baltic Sea sediment 186–187, 188
Bulgarian Neolithic sites 93, 102
Maharashtra archaeological artefacts 12, 13, **14**
Tirna Basin 145, 146, 147, 148, 155
Tyrrhenian Sea sediment 161, 162, 167
- characteristic (ChRM), Tirna Basin sediments 147–148, 152
- isothermal (IRM)
Bulgarian Neolithic sites 93
Maharashtra artefacts 12, 13, **14**, 15–16, 17
Tirna Basin 145, 146, 150
Tuscan architectural bricks 78, 79, 81
Tyrrhenian Sea 161, 162, 164, 165, 167
- saturation isothermal (SIRM) 143, 181
Baltic Sea sediment 186–187, 188
Bulgarian Neolithic sites 93, 98, 101
Maharashtra artefacts 12, 13, **14**, 15
Tirna Basin 145, 146, 148, 153
see also gyromagnetic magnetization; natural remanent magnetization; thermoremanent magnetization; viscous remanent magnetization
- reversal *see* geomagnetic field, reversal
- Riverlands, *hangi* site 49, **50–51**, 55, 60–61, 62, **67**
- San Bernardino Oratory, Pisa, architectural bricks 75, **76**
- Sangallo Bastion, Pisa, architectural bricks 75, **76**
- Santa Barbara Tower, Pisa, architectural bricks 75, **76**
- Santo Stefano dei Cavalieri, Pisa, architectural bricks **76**, 77
- Scotto Garden, Pisa, architectural bricks 75, **76**
- sedimentary rock
geomagnetic dating 2, 4, 5, 127
relative palaeointensity estimates 143, 144, 179, 181
- Senegal, palaeomagnetic data **134–135**, 136–137
- Serbia, archaeointensity curve 105, 106, 107
- Sharkov Chiflik, Neolithic site 91, 92, **94**, 98, **103**
- Shaw protocol 105
- Siberian anomaly 208
- single domain grains 146, 152, 164, 185
- smoothing 2, 127
- solar radiation 213
- South Africa, palaeomagnetic data 130, **131**
- South Atlantic Anomaly (SAA) 3, 4, 128, 130, 208, 209
possible effect on climate 128
as possible precursor to reversal 128
understanding of 128
- South Geomagnetic Pole 208
- Spain, archaeointensity 84–85
- speleothems, geomagnetic dating 2, 127, 130, 174, 194
- spikes
archaeomagnetic 2, 66, 68, 104
geomagnetic 104, 105
palaeointensity 3, 128
- superparamagnetic grains 97–98, 146, 185, 186
- SW Pacific, VADMs 66, **67**, 68
- Syria, archaeointensity curve 105, 106
- ‘Tagara’ ancient city 144
- tells layered settlements, Bulgaria 90, 91, 105
- temperature, surface
and galactic cosmic rays 213–214
and geomagnetic field intensity 209–212, 222
- Tenerife, palaeomagnetic data 133, **136–137**
- tephra
Tyrrhenian Sea 160, 162
see also Tyrrhenian Sea sediment
- Ter archaeological artefacts 10, **11**
archaeointensity studies 16, **18**, 20, 21, 22
magnetic susceptibility 15
rock-magnetic properties **14**, 15–16, 17

- Thellier archaeointensity determination method 105, 107
 Maharashtra archaeological artefacts 10, 16, 20
 Melbourne firebricks 28, 37
 New Zealand *hangi* 57
see also Coe sequence; IZZI variant; pseudo-Thellier methods; Triaxe intensity protocol
- ThellierTool 16, 20, 31, 37, 57–58, 98
- Ther village
 Quaternary alluvial mounds 144–145
 palaeomagnetic experiments 145–146
 radiocarbon chronology 145
- thermoremanent magnetization (TRM) 89
 anisotropy (ATRM), Melbourne firebricks 29, 31, 37, 39
 Bulgarian Neolithic sites 93, 98, 102
 French archaeomagnetic database 115
 Maharashtra archaeological artefacts 13, 16
 Melbourne firebricks 29, 31, 37, 39
 partial (pTRM)
 Maharashtra archaeological artefacts 13, 20
 Melbourne firebricks 31
 New Zealand *hangi* stones 57–58
 Tuscan architectural bricks 77
 VRM/TRM ratio 115
- Tirna Basin sediments
 ARM 145, 146, 147, 148, 151, 155
 ChRM 147–148, 152
 coercivity 146, 147, 149, 155
 declination 148, 152, 153–154
 demagnetization 146–147, 148
 directional variations 147–149, 151
 FORC 145, 146, 149, 152
 inclination 152, 153
 IRM 145, 146, 150
 magnetic susceptibility 146, 150
 NRM 146, 147–148, 151, 155
 palaeoinclination 148–149
 palaeomagnetic experiments 145–146
 palaeosecular variation 152–153
 regional correlation 153–155
 PSD state minerals 152–153, 155
 pseudo-Thellier normalization 146, 147, 150–152
 reliability 155
 radiocarbon chronology 145
 relative palaeointensity 4, 144, 146, 150–151, 152, 154–155
 rock magnetic properties 146–147, 148, 152–153
 SIRM 145, 146, 148, 153
- titano-magnetite
 Baltic Sea sediment 184, 185, 187
 Bulgarian Neolithic sites 98, 108
 Maharashtra archaeological artefacts 16
 Tirna Basin sediments 146–147, 155
- Triaxe intensity protocol, Tuscan architectural bricks 77–78, 79
- troposphere
 cosmic rays 206
 ozone and water vapour 215–217, 222
- Tunisia, palaeomagnetic data 134–135, 137
- Turkey, archaeointensity curve 105, 106
- Tuscany, architectural bricks 74–85
see also Pisa
- Tyrrhenian Sea sediment 160, 161
 age model 162, 163–164, 167, 175
 ARM 161, 162, 167
 coercivity 164
 comparison with previous records 168, 170–175
 conversion via pole (CVP) method 166, 170–171
 declination 162, 172, 173, 174
 demagnetization 161, 162, 165, 169
 FORC data 164, 166
 inclination 162–163, 166, 172, 173, 174
 IRM 161, 162, 164, 165, 167
 MAD values 162, 165, 166
 magnetic susceptibility 161, 162, 164–165, 167, 168
 magnetite 164, 165
 NRM 161, 162
 palaeosecular variation 4, 160, 162, 166, 170, 172, 175
 principal component analysis (PCA) 162, 165, 169
 reference curve matching 163–164, 168, 170, 171, 173, 175
 relative palaeointensity (RPI) 4, 160, 162, 166–167, 171, 172–175, 172
 rock magnetic analysis 161–162, 164–165
- Uganda, palaeomagnetic data 132, 133
- Van Allen radiation belts, trapped particles 216, 217, 223
- Vanuatu, VADMs 67, 68
- Vesuvius, 1906 eruption, tephra 162, 163
- virtual axial dipole moments (VADM), New Zealand *hangi* stones 66, 67, 68
- virtual dipole moments (VDMs), southeastern Europe 107–108
- virtual geomagnetic poles (VGPs) 193–202
 behaviour during reversal 194
 displacement
 Brunhes-Matuyama chron 5, 194–202
 age-deposition model 195
 latitude variation 195, 196
 velocity and acceleration 195–196, 197–200
 distribution 196–197, 201
 PSV 193, 196
- viscosity coefficient, Bulgarian Neolithic sites 97
- viscous remanent magnetization (VRM)
 Baltic Sea sediment 182, 186
 VRM/TRM ratio 115
- volcanic rock, geomagnetic field variation data 2, 127
- Volturno River 160, 161
- Weld Pass, *hangi* site 49, 50–51, 55–56, 61, 63, 66, 67
- Whitianga, *hangi* site 49, 50–51, 54–55, 58–59, 60, 66, 67
- Yarim Tepe, archaeointensity curve 105, 106, 107
- yaws, DSV curves 114, 118, 119, 120, 121, 122, 125
- Zambia, palaeomagnetic data 132, 133
- Zijderveld plots 16, 21, 22, 98, 99, 162, 165
- Zimbabwe, palaeomagnetic data 130, 131